

SRS REPORT

ON

##### “VISITOR MANAGEMENT SYSTEM”

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INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY

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Certificate

This is to certify that the SRS report entitled

“**VISITOR MANAGEMENT SYSTEM**”

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have partially completed the Project entitled ” **VISITOR MANAGEMENT SYSTEM**”, under my guidance in partial fulfillment of the requirement for the Project Based Learning in S.E. Information Technology of International Institute of Information Technology, Hinjewadi, by Savitribai Phule Pune University for the academic year 2022 – 2023.

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# Acknowledgement

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Abstract:

The Visitor Management System with Face Detection and WhatsApp Integration is a project aimed at enhancing the security and efficiency of visitor management processes. This system utilizes facial recognition technology to detect and identify visitors, allowing administrators to efficiently approve or request visitors to wait via WhatsApp messaging.

The primary objective of this project is to streamline the visitor management process by automating visitor identification and communication with the help of advanced technologies. The system consists of two main components: the face detection module and the WhatsApp integration module.

The face detection module utilizes computer vision algorithms to capture and analyze the facial features of visitors as they approach a designated entry point. By comparing the detected faces against a pre-existing database of authorized individuals, the system can accurately identify whether a visitor is known or unknown. This real-time facial recognition capability significantly enhances security by alerting administrators of potential threats or unauthorized access attempts.

Upon successful facial recognition, the system enables the administrator to promptly approve the visitor for entry or request them to wait for further verification. The WhatsApp integration module allows administrators to send instant messages to visitors via WhatsApp, providing clear instructions and updates. Through this integration, administrators can efficiently communicate with visitors, saving time and enhancing the overall visitor experience.

The Visitor Management System aims to offer several benefits. Firstly, it increases the security level by accurately identifying visitors and promptly notifying administrators of potential security risks. Secondly, it improves the efficiency of visitor management by automating the identification and approval process, reducing manual effort and wait times. Lastly, the WhatsApp integration enhances communication between administrators and visitors, ensuring effective information exchange and a seamless experience.

In conclusion, the Visitor Management System with Face Detection and WhatsApp Integration is a powerful tool that revolutionizes traditional visitor management processes. By leveraging facial recognition technology and integrating with WhatsApp messaging, this system provides enhanced security, improved efficiency, and effective communication, making it an invaluable asset for organizations that prioritize visitor management and security.

# Chapter 1

## Introduction to Project Topic

**1.1 Overview:**

The Visitor Management System with Face Detection and WhatsApp Integration is a software project designed to revolutionize the way visitors are managed within organizations. By leveraging facial recognition technology and integrating with WhatsApp messaging, the system aims to enhance security, improve efficiency, and streamline communication between administrators and visitors. This project applies software engineering principles to develop a robust and user-friendly solution that addresses the challenges faced in traditional visitor management systems.

**1.2 Brief Description:**

The project focuses on developing a visitor management system that incorporates cutting-edge technologies to automate the identification and approval process. The system utilizes facial recognition algorithms to detect and analyze visitors' faces as they approach a designated entry point. This allows for real-time identification and comparison against a database of authorized individuals. Additionally, administrators can communicate with visitors through WhatsApp messaging, providing instructions and updates.

**1.3 Problem Definition:**

Traditional visitor management systems often rely on manual processes, such as paper sign-in sheets or identity verification through physical documents. These methods are time-consuming, prone to errors, and lack efficiency. Moreover, there may be delays in communication between administrators and visitors, leading to confusion and inconvenience. The project aims to address these challenges by developing an automated system that seamlessly integrates face detection and WhatsApp messaging to streamline the visitor management process.

**1.4 Applying Software Engineering Approach for the Project:**

Task 1: Business Problem:

The initial task involves identifying and understanding the business problem associated with the current visitor management system. This includes conducting a thorough analysis of the limitations, inefficiencies, and security concerns. The project team will engage with stakeholders, gather requirements, and define the specific objectives and goals for the new system. This task aims to ensure that the project addresses the organization's unique needs and aligns with its strategic objectives.

Task 2: Planning:

During the planning phase, the project team will create a comprehensive project plan. This involves defining project scope, establishing timelines, allocating resources, and identifying potential risks and mitigation strategies. The team will also determine the necessary hardware, software, and infrastructure requirements for the Visitor Management System. A well-defined plan will guide the project's execution, ensuring that it stays on track and meets its objectives.

Task 3: Design:

In the design phase, the project team will create the architectural and functional design of the Visitor Management System. This includes designing the database schema, user interface, and system components. The team will also define the algorithms and techniques required for facial recognition and integrate the WhatsApp messaging functionality. Security measures, such as data encryption and access controls, will be incorporated into the design to protect visitor information. This task aims to ensure that the system is well-structured, scalable, and user-friendly.

Task 4: Construction:

The construction phase involves the actual implementation of the Visitor Management System based on the design specifications. The project team will develop the software, configure the database, and integrate the necessary modules. This task includes coding, testing, and debugging to ensure the system's functionality and reliability. The team will follow coding best practices, adhere to coding standards, and perform regular code reviews to maintain code quality throughout the development process.

Task 5: Deployment:

During the deployment phase, the project team will prepare the Visitor Management System for deployment in the organization. This involves conducting thorough testing, including unit testing, integration testing, and system testing, to verify that the system meets the defined requirements. User acceptance testing will be performed to ensure that the system is intuitive and meets the needs of the administrators. Once testing is complete, the system will be deployed in a production environment, and training and support materials will be provided to users and administrators. Ongoing maintenance and support plans will also be established to address any future issues or updates.

By following this software engineering approach, the project team can effectively address the business problem, plan and design the system, construct the solution, and successfully deploy it. This approach ensures that the Visitor Management System is developed in a systematic and structured manner, meeting the organization's requirements and delivering a reliable, secure, and efficient solution for managing visitors.

# Chapter 2

## Literature Survey

|  |  |  |
| --- | --- | --- |
| **Title** | **Modules** | **Description** |
| * GUI | 1. Tkinter 2. OpenPyxl | * Tkinter python library used for grid view table for user interface. * OpenPyxl fetches data from excel sheet. |
| * Face Recognition | 1. Facerecognition 2. Opencv 3. Pandas 4. Numpy | * Using the inbult facerecognition module we encode the pictures in the database. And later used to recognize familiar faces. * Pandas is used to read the excel file containing the name and contact number of individuals. * Opencv is used for accessing the computer hardware such as cameras and keyboard. |
| * Notifications | 1. plyer | * Plyer is a multi platform library that allows sending notifications to the user. |
| * Whatsapp Message Alert | 1. PyWhatkit | * PyWhatKit is used to send the whatsapp message alert to the visitor to alert them to enter the room or to wait. |

# Chapter 3

## Software Requirements Specification

**Software Requirements Specification (SRS) for Visitor Management System**

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3.3. Security

3.4. Compatibility

4. Constraints

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5 .Software Requirements

6. Use Case Diagram

7 .Testing Plan

8 . E – R Model

9. Project Plan

10 .References

1. Introduction:

The Visitor Management System is a software system designed to manage visitors in a company or organization. The system will facilitate the check-in and check-out process, capture visitor information and Face, and ensure the security of the premises.

#OBJECTIVES OF PROJECT:

1. Maintain the visitor’s entry easily and Facilitate visitor the ease to register.
2. Keep workspace Safe .
3. Securing Clients Building.

#Scope of Project:

->the project is custom software to manage visitor’s in an institute.

1. Working :

->When person comes to meet the Admin the webcam will Scan their faces.

->After Scanning the System will check the person’s data is available in database or not.

->Searching will be done by their given their face.

->If the person’s data is available in database the System will fetch his/her ‘

Name, Contact Number . `

->The Information about the visitor is displayed on admin’s System.

->The Admin will then decide whether to Allow the person to visit,

Put him/her on waiting list.

->If the admin don’t respond within 1 min the System will send a Automated

Whatsapp message to visitor mentioning that “Sorry!!Admin is not Available right now , please try after some time.”

1. Functional Requirements :

The system shall have the following features:

2.1. Visitor Registration

-> The system shall allow the user to register new visitors.

-> The system shall require the visitor’s ID, name, phone number.

-> The system shall capture a photo of the visitor for identification purposes.

2.2. Check-In

-> The system shall allow the user to check-in visitors.

-> The system shall verify the visitor’s identity by matching the photo with the registered information.

2.3. Visitor Logs

-> The system shall maintain a log of all visitor activity.

-> The system shall record the visitor’s name, check-in.

-> The system shall allow the user to search and filter the visitor log by date, time, visitor name.

-> Notifications

-> The system shall send notifications to the Admin when their visitor checks in.

4. Non-Functional Requirements :

3.1 Usability

-> The system shall have a user-friendly interface.

-> The system shall be easy to navigate.

-> The system shall provide clear instructions to the user.

3.2. Performance

-> The system shall be able to handle a high volume of visitors.

-> The system shall respond to user input within 2 seconds.

3.3. Security

-> The system shall require a login for access.

-> The system shall use secure encryption to protect visitor data.

-> The system shall restrict access to visitor data to authorized users.

3.4. Compatibility

-> The system shall be compatible with Windows, macOS, and Linux operating systems.

-> The system shall be compatible with Windows 7/8/10 and Above.

5. Constraints :

4.1. Hardware Requirements

-> The system shall require a computer with a minimum of 4 GB RAM.

-> The system shall require a webcam for capturing visitor Face.

6 .Software Requirements :

->The Visitors Management System shall allow authorized personnel to register and manage visitors.

->The system shall maintain a database of all registered visitors.

->The system shall allow authorized personnel to view the visitor database and generate reports.

->The system shall Recognize the Student or Faculty member as their data and face is already present in System.

->The system shall send notifications to admin when their visitors arrive.

->The system shall allow Admin to pre-register visitors.

->The system shall allow visitors to check-in

->The system shall restrict access to sensitive areas to authorized personnel only.

->The system shall maintain a log of all system activities.

7. Use Case Diagram:

The use case diagram for the Visitors Management System is shown below:

A picture containing sketch, drawing, diagram, line art

Description automatically generated

8 .Testing Plan :

The testing plan for the Visitors Management System shall include the following steps:

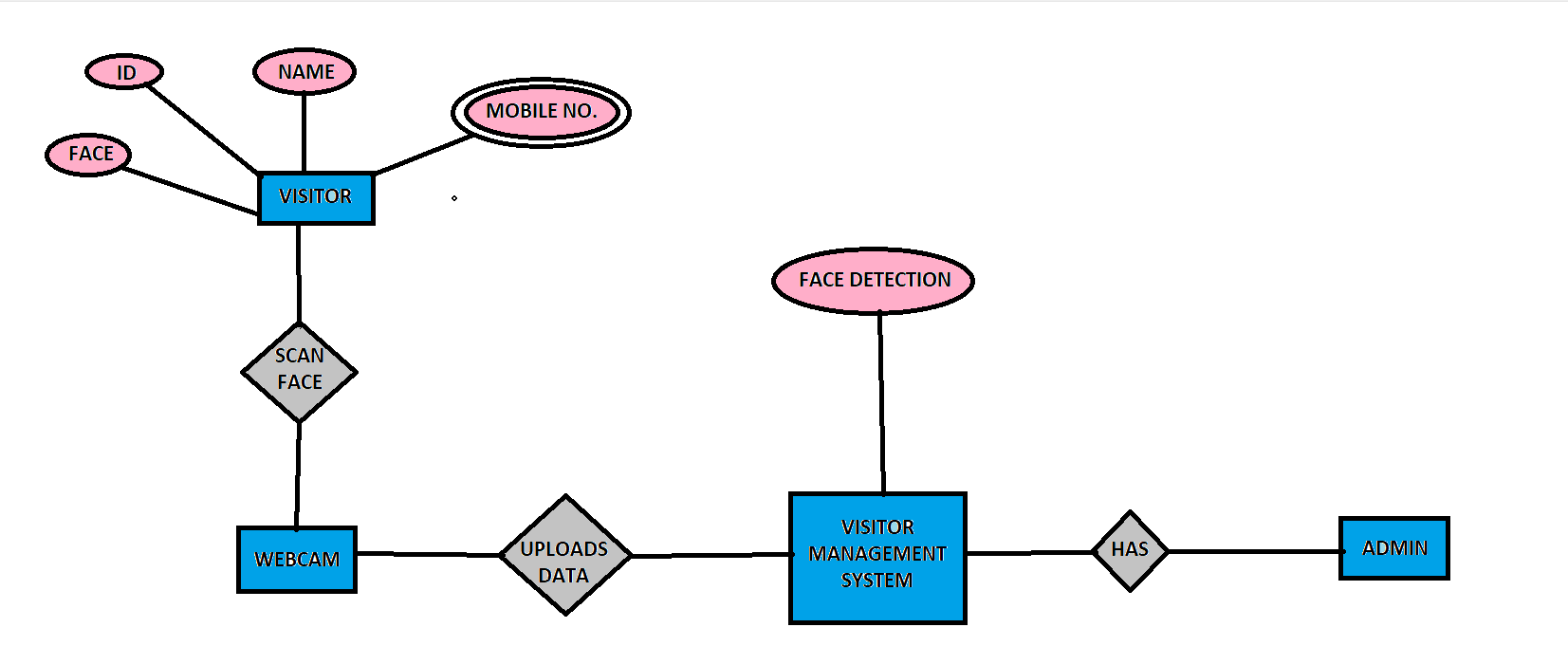
->Unit Testing: Each module shall be tested individually to ensure its functionality.

->Integration Testing: Modules shall be tested in combination to ensure they work together as expected.

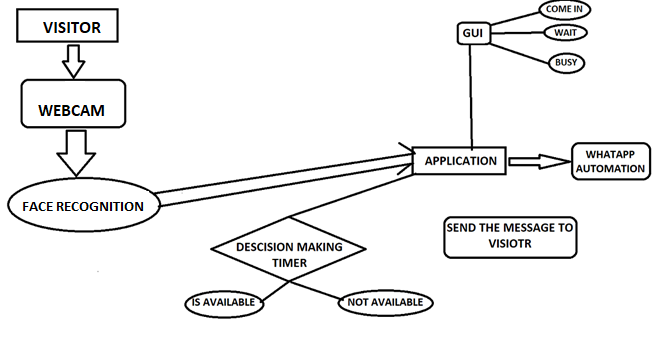
->System Testing: The entire system shall be tested to ensure it meets the system requirements.

->Face Recognition Test: The system shall be tested by users to ensure it Recognize the Authorized persons.

9. E – R Model :



10.Data Flow Diagram:



10. Project Plan :

The project plan for the Visitors Management System shall include the following steps:

Requirements Gathering: Gather system requirements from Internet.

Technology Requirement: Face Recognition and databases.

Design: Develop a design for the system based on the requirements.

Implementation: implement the system.

Testing: Test the system to ensure it meets the system requirements.

Maintenance: Provide ongoing maintenance and support for the system.

# Chapter 4

## System Design

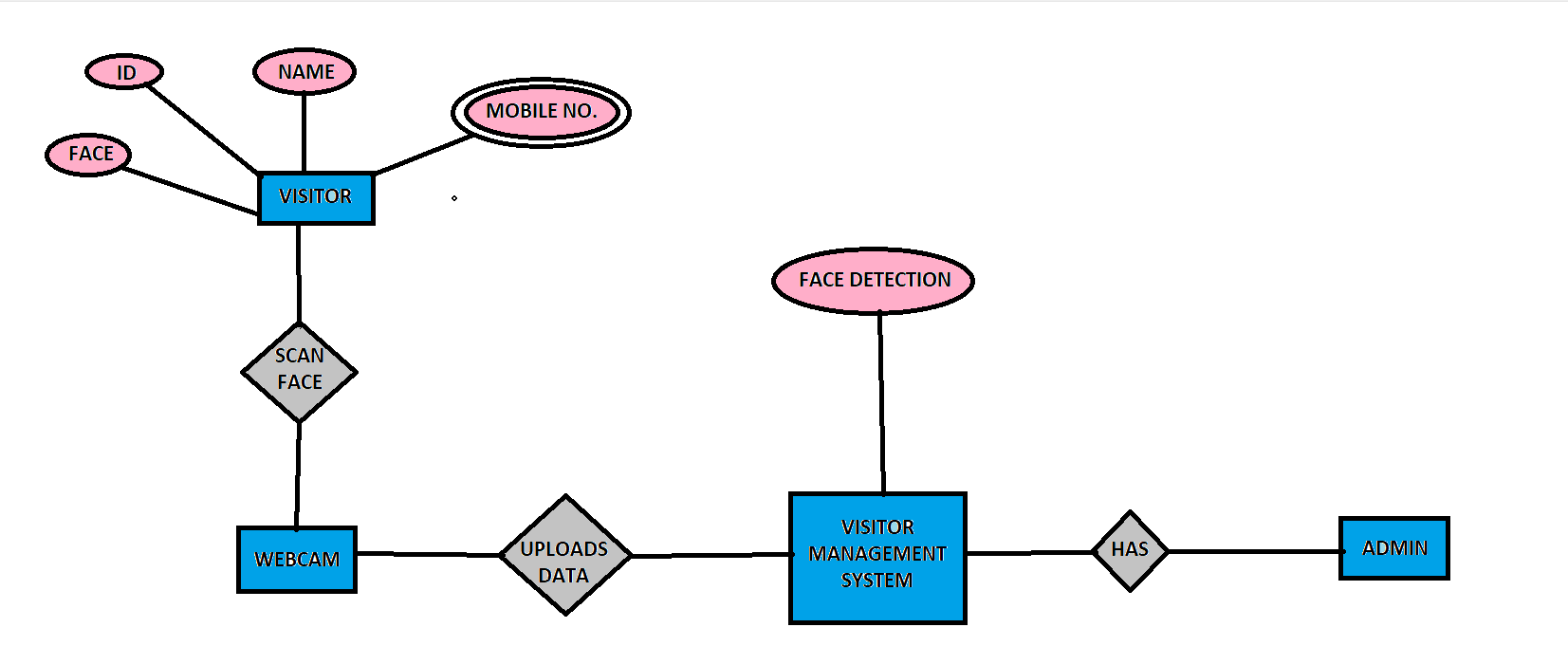
### System Architecture

A diagram of a process

Description automatically generated with low confidence

### UML Diagrams

#### Class Diagram



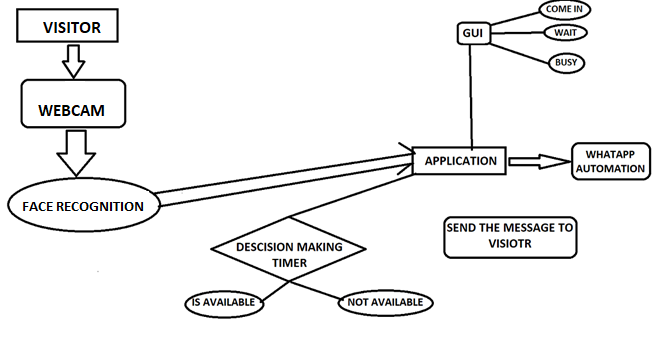
#### Use Case Diagram

.

A picture containing sketch, drawing, diagram, line art

Description automatically generated

#### Activity Diagram



# 

# Chapter 5

## Technical Specification

1.Hardware Requirements:

* Computer or server with sufficient processing power and memory to handle the system load
* Webcam or camera devices for capturing visitor faces
* Mobile devices with WhatsApp capability for administrators

2.Software Requirements:

* Operating System: Compatible with Windows, Linux, or macOS
* Web server software (e.g., Apache, Nginx) for hosting the system
* Backend programming language: Python, Java, or any suitable language for server-side development
* Frontend technologies: HTML, CSS, JavaScript, and frameworks like React or Angular for user interface development
* Facial recognition library or API for face detection and identification
* Database management system (e.g., MySQL, PostgreSQL) for storing visitor data
* WhatsApp API or SDK for integrating WhatsApp messaging functionality

3.Facial Recognition and Detection:

* Utilize state-of-the-art facial recognition algorithms and libraries such as OpenCV or Dlib for face detection and identification
* Configure the system to capture visitor faces in real-time using webcam or camera devices
* Implement facial feature extraction to create a unique facial template for each visitor
* Develop a matching algorithm to compare captured faces with the database of authorized individuals for identification

4.Database Design:

* Design a database schema to store visitor information, including personal details, visit history, and approval status
* Ensure data integrity, normalization, and efficient querying for quick retrieval and processing of visitor data
* Implement appropriate security measures to protect visitor data, including encryption of sensitive information

5.WhatsApp Integration:

* Integrate the system with the WhatsApp messaging platform to facilitate communication with visitors
* Develop functionalities to send automated messages to visitors, including approval notifications or requests to wait
* Implement a mechanism to receive and process visitor responses via WhatsApp messages
* Ensure secure and reliable communication between the system and the WhatsApp platform through appropriate authentication and encryption mechanisms

# Chapter 6

## Conclusion

In conclusion, the Visitor Management System with Face Detection and WhatsApp Integration offers a robust and efficient solution to address the challenges associated with traditional visitor management systems. By leveraging facial recognition technology and integrating with WhatsApp messaging, the system enhances security, improves efficiency, and streamlines communication between administrators and visitors.

The system's architecture incorporates key components such as the facial recognition module, database, WhatsApp integration module, user interface, and administrative backend. The system follows a layered or tiered structure, with clear interfaces defined between components. External systems and services, such as facial recognition APIs and the WhatsApp messaging platform, are seamlessly integrated into the system.

Through the application of a software engineering approach, including thorough analysis, planning, design, construction, and deployment, the project ensures that the Visitor Management System meets the specific requirements and objectives of the organization. The project team has considered the business problem, conducted extensive planning, designed a scalable and user-friendly system, implemented the necessary features, and successfully deployed the system.

The Visitor Management System improves security by accurately identifying visitors and promptly notifying administrators of potential security risks. It enhances efficiency by automating the identification and approval process, reducing manual effort and wait times. Furthermore, the integration of WhatsApp messaging improves communication between administrators and visitors, ensuring effective information exchange and a seamless experience.

In conclusion, the Visitor Management System with Face Detection and WhatsApp Integration offers a comprehensive and innovative solution that revolutionizes visitor management processes. It provides organizations with enhanced security, improved efficiency, and streamlined communication, making it an invaluable asset in managing visitors effectively.

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